

Chapter 1

Strategic Outlook and FY 2005 Accomplishments by Goal



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Strategic Outlook

The strategic outlook identifies the most urgent and compelling programmatic and managerial priorities for the next five years. Each year, NOAA's planning processes provide an opportunity to assess our progress, accommodate new developments and events within and outside NOAA, and adjust our program emphases to ensure progress toward our strategic goals:

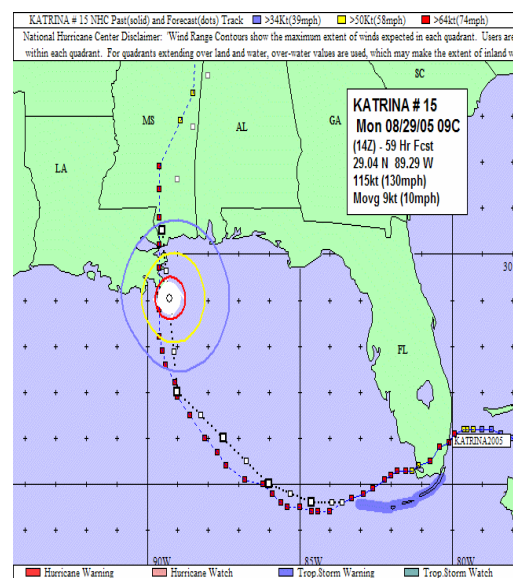
- *Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management.*
- *Understand climate variability and change to enhance society's ability to plan and respond.*
- *Serve society's needs for weather and water information.*
- *Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation.*
- *Provide critical support for NOAA's mission.*

For NOAA to maximize societal benefits, it must continuously calibrate its programmatic and managerial priorities. The priority areas listed below have been derived from input from NOAA's stakeholders, as well as, internal analyses of mission requirements, external trends and drivers, program capabilities, and alternative solutions to achieving NOAA's strategic goals. Each is NOAA-wide in nature; it transcends disciplines and organizations, requires significant and sustained financial or managerial resources, and has a singular impact on NOAA's ability to achieve its long-term strategic goals.

NOAA Wide Accomplishments

NOAA Provided Critical Information and Support Before and After Hurricane Katrina

Within 48 hours of landfall on the central Gulf coast, all NOAA National Hurricane Center forecasts indicated that Katrina would come ashore in southeastern Louisiana. NOAA accurately predicted the path of this hurricane in advance of landfall, enabling governments to initiate mass evacuations. During Katrina, NOAA collected accurate tide and current information on storm surge that will be



invaluable to engineers planning the recovery and rebuilding of the coasts according to standards safe for people and the environment. NOAA provided thousands of before and after Katrina images using high-resolution aerial photography that provided critical help to damage assessment teams and emergency recovery operations. NOAA's mapping and charting services acted immediately after the storm to find navigation obstructions that might impede maritime commerce and delivery of critical supplies to stricken populations. Overall, NOAA conducted 13 surveys for major ports and rivers. Specifically, areas surveyed included: the Mississippi River; Lake Charles; Bayou Labarte; and the following ports: Pascagoula; Biloxi; Mobile; New Orleans; Pensacola; Gulfport; Houston; Galveston; Arthur; and Port Fourchon. NOAA analyzed satellite imagery of the area to determine coastal impacts (e.g., amount of land inundated and wetland loss.) NOAA assisted the State of Louisiana Department of Wildlife and Fisheries Enforcement agents in security and safety matters involving marine rescues through the provision of NOAA enforcement agents and vessels. NOAA determined a commercial fishery failure and a fishery resource disaster in the Gulf of Mexico which will enable additional assistance to be delivered. Further, NOAA helped provide emergency response for more than 200 hazard incidents, including several Superfund hazardous waste sites.

NOAA Led the Advancement of Integrated Earth Observations Systems

NOAA led the approval and is leading the implementation of the *Strategic Plan for the US Integrated Earth Observation System* through the U.S. Group on Earth Observations (USGEO). USGEO, a standing subcommittee of the White House Committee on Environment and Natural Resources composed of 15 federal agencies and three White House offices, created the plan released in April 2005. NOAA then led a U.S. Public Engagement Workshop in May 2005 to discuss the plan and its implementation. On a parallel track, the Department continued to provide international leadership in Earth observations and helped to facilitate international agreement on the Global Earth Observation System of Systems (GEOSS). The 10-year implementation plan was adopted at the Third Global Earth Observation Summit, held in February 2005 in Brussels. By adopting the plan, the nations have accomplished the first phase of realizing the goal of a comprehensive, integrated, and sustained Earth observation system. The Department also played a vital role in the establishment of the permanent Group on Earth Observations (GEO) through membership on its Executive Committee and in the successful transition of its Secretariat from the United States to Geneva, Switzerland.

Ecosystems

U.S Ocean Action Plan

In December 2004, the Administration released the "U.S. Ocean Action Plan," a response to the U.S. Commission on Ocean Policy's report entitled, "An Ocean Blueprint for the 21st Century." NOAA worked with the Council on Environmental Quality and other federal agencies to develop the action plan. NOAA continued in FY 2005 to provide national and international leadership for the U.S. Ocean Action Plan by co-leading the

development of the U.S. Ocean Research Priorities Plan and Implementation Strategy (due December 31, 2006) and by supporting the establishment of the coordinated ocean governance structure. NOAA continued rebuilding fisheries and reducing capacity to improve food security, increase economic benefits, and improve stability of marine ecosystems. Other accomplishments included promoting the greater use of market-based systems for fisheries management and working to improve regional collaboration in partnership with state, local and tribal leadership. The Gulf of Mexico and the Great Lakes are areas that both benefited from the improved regional collaboration under the U.S. Ocean Action Plan.

Recovering Threatened and Endangered Salmon

Efforts to conserve and recover the Nation's protected resources have made steady and sometimes dramatic progress, as reported in the National Marine Fisheries Service (NMFS) 2004 Biennial Report to Congress on the recovery program for threatened and endangered species, published in August 2005. In recent years, the abundance of both hatchery-reared and naturally spawning populations of listed salmon and steelhead has generally increased. Improvements are seen in many salmon populations —16 of 26 species or evolutionarily significant units (ESU) of Pacific salmon are stable or increasing, six more than had been anticipated for this time.



Spawning Salmon

NOAA Proposes Legislative Improvements

NOAA transmitted to Congress a comprehensive package of amendments to reauthorize the Magnuson-Stevens Act and the Marine Mammal Protection Act, and proposed the National Offshore Aquaculture Act. The bills meet Administration commitments made in the December 2004 U.S. Ocean Action Plan and other key objectives and necessary improvements.

NOAA Conducts Successful “Safe Sanctuaries” Exercise

In partnership with the U.S. Coast Guard, the State of Florida, Monroe County, and local response organizations, NOAA participated in a scenario which involved the simulated grounding of an 800 foot containership carrying 1,200,000 gallons of fuel in the Florida Keys National Marine Sanctuary. The exercise simulated the injuring of ecological and historical/cultural resources and two releases of oil and potentially unstable cargo. The exercise evaluated the



collective ability to deliver data, realtime observations, forecasts, and scientific expertise and assets to address protection of NOAA trust resources in the event of a major incident.

NOAA Exploration of South Pacific Finds New Species and Magical Scenes; Sets Records for NOAA Undersea Research and Ocean Exploration

Hawaii Undersea Research Laboratory (HURL) and Ocean Exploration completed the longest and most challenging ocean expedition in HURL's 25-year history. The ship traveled 10,000 nautical miles and the Pisces submersibles made 67 dives, one as deep as 1,820 meters on the Brothers undersea volcano. The nearly five month long international expedition to explore a largely unknown region of the South Pacific ocean produced many discoveries, including numerous suspected new species, new ranges for known species, measurements of the diversity of marine life, and more data about undersea volcanoes and the rare interface of life based on sunlight with chemosynthetic organisms.

Climate

NOAA Advances Global Ocean Observing System (GOOS) with Deployment of Global Drifter 1250



First test of a radar wind profiler on a 10-m discus buoy



Scientist deploys a drifter buoy

In cooperation with interagency and international partners, NOAA advanced the global component of the GOOS past the 50 percent milestone. A major earth observation milestone was achieved when NOAA deployed Global Drifter 1250 near Halifax, Nova Scotia, and fully implemented the first component of the GOOS. This milestone also represented the first element of GEOSS to be completed. Drifters are vital for monitoring climate research and forecasts.

The global drifter buoy array is important because drifting buoys measure ocean temperature, currents and atmospheric pressure over the ocean. They also provide the primary calibration system, or 'ground truth,' for satellite measurement of sea surface

temperature, which is essential for climate, weather, and storm prediction. The scientific design for the global surface drifting buoy array calls for 1,250 buoys to be maintained worldwide based on the requirement for buoy measurement of sea surface temperature in combination with satellite measurement.

AgClimate Decision Support Tool

NOAA-supported university scientists introduced AgClimate, a prototype decision support Web site (<http://www.agclimate.org/>) which includes several decision support tools. The current version of AgClimate includes (1) a tool which allows users to learn about risks associated with climate variability and El Niño/Southern Oscillation (ENSO) for their county; (2) crop risk tools for peanut, tomato, and potato to enable users from selected counties to learn how climate variability and ENSO affect these crops, as well as to view probabilities of how these crops will perform for a climate forecast; and (3) wildfire risk forecast for the forested areas of the Southeast.

NOAA Assists the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report on Climate Change

NOAA's new state-of-the-art coupled climate model (CM2) provided massive amounts of data to the world's research communities for the IPCC Fourth Assessment Report on Climate Change (2007). The CM2 model was presented at several conferences and has been accepted for publication in peer-reviewed literature, and has been evaluated and revealed as one of the best in the world by a variety of measures.

Presidential Rank Award given to NOAA Research Scientists

Dr. Venkatachala Ramaswamy, NOAA Geophysical Fluid Dynamics Laboratory, for his leadership and expertise in the understanding and quantification of the factors that change global climate and his ability to clearly communicate his results to the public and policy makers. Dr. Petrus P. Tans, NOAA Climate Modeling and Diagnostics Laboratory, for his discovery that it may be possible to increase carbon uptake on land, for example through the growth of trees, and through agricultural practices that increase the carbon content of soils.

NOAA Develops Index that Demonstrates Changes in Ocean Productivity Linked to Climate Variability

The North Pacific Climate Regimes and Ecosystem Productivity Program developed a new index of the timing of ice retreat over the southern shelf to better predict changes in the ocean temperature, salinity, the timing of the spring bloom and ecosystem structure.

Weather & Water

NOAA Begins Expansion of U.S. Tsunami Warning Program; Accurately Predicts West Coast Tsunami

In response to the December 26, 2004 Indian Ocean tsunami, NOAA has begun to expand the U.S. Tsunami Warning Program. Using supplemental funding received in FY

2005, the multi-year implementation plan will improve the Tsunami Warning and Mitigation System and Tsunami Forecast System. Improvements in FY 2005 include: providing 24 hours a day, seven days a week (24/7) operations at NOAA Tsunami Warning Centers, seismic monitoring, and improved community preparedness through the Tsunami Ready program. NOAA also utilized the experimental Tsunami Forecast System to accurately predict a tsunami just off the coast of Oregon following an approximately 7.2 magnitude earthquake off of the northern California coast in June. The accurate forecast and measurement of the resulting tsunami enabled NOAA's Alaska Tsunami Warning Center to cancel its warning for the Oregon coast, which was issued five minutes after the earthquake struck.

NOAA's Central Computer System (CCS) Runs with Full Backup

NOAA's National Centers for Environmental Prediction (NCEP) computer operations were moved to the new Weather and Climate supercomputer. The planned system upgrade to the computer, under the \$180 million nine-year contract, provides the necessary computational power to operate higher resolution numerical weather prediction models, coupled ocean-atmosphere models, operational climate models, and improved ensemble models. The new CCS, for the first time, is comprised of two identical, geographically separate systems, which will provide full backup capability for the entire suite of over five million numerical guidance products. While it serves as a full backup system the CCS enhances NOAA's supercomputing ability, providing higher resolution models which result in improved forecasts.

NWS Accurately Forecasts Most Active Atlantic Hurricane Season in History

The 2005 Atlantic hurricane season was the busiest on record and extended the active hurricane cycle that began in 1995—a trend likely to continue for years to come. In all, there were 27 named storms, including 15 hurricanes of which seven were major (Category 3 or higher). Six hurricanes (Cindy, Dennis, Katrina, Ophelia, Rita, and Wilma) and two tropical storms (Arlene and Tammy) directly struck the United States. The preliminary FY 2005 actual for the GPRA measure: 48 Hour Hurricane Track Error is 99 nautical miles, which far exceeds the FY 2005 target of 128 nautical miles. NOAA scientists predicted that 2005 would be an extremely active hurricane season, forecasting near record activity when the hurricane season outlook was updated in early August.

NOAA and the EPA Urge Americans to "Be Air Aware"

Air quality forecasts produced by NOAA and the Environmental Protection Agency (EPA) were enhanced and expanded to better serve more regions of the United States. Forecast information for ground-level ozone that has been available for the northeastern United States will now include areas from just east of the Rocky Mountains to the Atlantic and Gulf coasts. Hour-by-hour forecasts, through midnight the following day, are available online, providing information for the onset, severity, and duration of poor air quality to more than 180 million people. State and local air quality forecasters use this information as another tool in issuing next-day alerts for poor air quality to more than 300 communities.

Commerce & Transportation

NOAA Commerce and Transportation Programs Support Gulf Coast Hurricane Preparation, Response, Recovery and Planning

NOAA responded immediately to the destructive 2005 hurricanes by providing aerial imagery of the impacted coastline to help emergency responders assess the situation, sending its Scientific Support Coordinators to address nearly 400 hazardous material spills, and its Navigation Response Teams to survey for obstructions to navigation in critical ports and waterways to allow relief supplies to be delivered and maritime commerce to resume. Readings from the National Water Level Observation Network tide stations in the region helped forecasters make accurate storm surge predictions before hurricanes made landfall and provided emergency responders with real time storm tides. These NOAA capabilities continue to support the impacted areas with response to spills and maritime incidents. NOAA has also invested more than \$3.7 million in 2005 grant funding to Gulf States to build, and in some cases re-build, their infrastructure and capacity to determine and deliver consistent and timely height information. Accurate land and water level heights are critical to determining effective highway evacuation routes, levee heights, storm surge modeling, flood plain mapping, sea level rise calculations, vessel under-keel and bridge clearance, subsidence monitoring, and restoration of coastal habitats. NOAA released Technical Report 50 to describe methods and research results into recent rates of subsidence in the lower Mississippi Valley and northern Gulf Coast region. The data in this report were obtained from the analysis of leveling projects in NOAA's geodetic database observed between 1920 and 1995.

NOAA's Aviation Weather Program Exceeded Aggressive Performance Criteria for Aviation Forecasts

The Aviation Weather Program is vital to aviation operations because as it improves capacity and safety to the National Airspace System (NAS). Today, weather accounts for 70% of all air traffic delays within the U.S. National Airspace System, the Federal Aviation Administration (FAA) indicates these delays cost the U.S. economy \$10B/year of which an estimated \$4B is avoidable, and on average, 200 general aviation pilots are killed every year in weather-related accidents across the U.S. With respect to ceiling and visibility forecasts, the False Alarm Rate decreased five percentage points compared to FY 2004. The program also fielded and tested 25 Water Vapor Sensors to increase critical observations used in forecasts, created and conducted a new training course for meteorologists and pilot weather modules utilized by over 10,000 individuals, and successfully demonstrated the Volcanic Ash Collaboration Tool in collaboration with the Federal Aviation Administration. The Volcanic Ash Collaboration Tool is an online discussion board that allows NOAA, FAA, and USGS to share volcanic ash data collected from different models, ensure that all information is accurate and consistent, and provide this information to pilots. The new collaboration tool ensures that warnings and forecasts for volcanic ash are timely, accurate, and consistent.

New NOAA Physical Oceanographic Real-Time System (PORTS®)

The Columbia River is the 13th major United States waterway to install a new PORTS® designed to support safe, cost-efficient marine transportation by providing accurate real-time oceanographic and meteorological data. Managed by NOAA, the system is now operational and serving that maritime community in a variety of user friendly formats, including telephone voice response and the Internet. The Columbia River annually handles nearly 48 million tons of cargo. Vessel operators must know the depth of the water in order to maximize ship efficiency and minimize groundings and accidents. In port areas, water levels and currents frequently differ from predictions, as a result of changes in winds and water run off. PORTS® provides accurate real-time information needed to make marine transportation both safe and efficient. Users of NOAA PORTS® information include port authorities, vessel pilots, shipping companies, U.S. Coast Guard, U.S. Navy, recreational boaters, fishermen, coastal managers, environmental organizations, academia and surfers. PORTS® is available online at http://tidesandcurrents.noaa.gov/d_ports.html.

NOAA Makes Electronic Charts more Accessible via the Internet

NOAA now offers both its raster nautical charts and vector Electronic Navigational Charts (ENC) for free download via its official website at <http://nauticalcharts.noaa.gov>. Following on the success of the ENC launch in 2003, NOAA placed its Raster Navigational Charts (RNC) on the Internet in late 2005. The files offered are geo-referenced, full-color images of NOAA's paper nautical charts, published and updated by NOAA. Like the ENCs, the RNCs have become an important and successful contributor to safe and efficient marine transportation. The response to the "free on the Internet" policy is overwhelmingly positive. NOAA also offers an ENC-Direct-to-GIS capability to enable non-navigational users such as coastal zone managers and scientists to use NOAA chart data more easily in Geographic Information Systems. NOAA's research into improved products and delivery mechanisms is an ongoing effort to provide users with highly accurate information for safe navigation and other purposes. These activities support NOAA's goals to promote safe marine transportation and to balance economic and environmental interests in the marine environment.

Mission Support

NOAA Created its First-ever Corporate 20-Year Research Vision and 5-Year Research Plan in FY 2005

Documents to guide the long and short-term direction of NOAA's research enterprise were developed and widely distributed through an extensive stakeholder outreach campaign. The 20-Year Research Vision adopts a longer-term perspective of ecological challenges and the scientific advances that can be expected to help meet those challenges, while the 5-Year Research Plan includes milestones for NOAA's research that are aimed at improving NOAA's products and information services in the near term.

NOAA Aircraft and Ships Collected Data that Supported Accurate Prediction of Hurricanes Katrina and Rita and Reopening of Ports after Hurricanes

NOAA's WP-3D Orion research and reconnaissance turbo-props and Gulfstream-IV high altitude surveillance jet flew several missions that provided some of the data that allowed accurate prediction of devastating hurricanes Katrina and Rita. NOAA ships THOMAS JEFFERSON and NANCY FOSTER were diverted from planned missions to areas impacted by the hurricanes and helped collect the data needed to reopen critical Gulf Coast ports and assess impact on Gulf Coast ports and assess impact on Gulf fisheries.

NOAA's Successful Satellite Launch Ensures Continuity and Improved Collection of Data

NOAA-N was successfully launched from Vandenberg Air Force Base, California on May 20, 2005. Upon achieving orbit NOAA-N became NOAA-18 and was declared operational on August 30, 2005 as the primary afternoon satellite in the Polar Operational Environmental Satellite (POES) constellation. NOAA-18 marks the beginning of the NOAA and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) Initial Joint Polar System (IJPS) agreement. The IJPS project comprises two NOAA polar satellites (NOAA-18 and NOAA-N Prime) and two EUMETSAT satellites (Metop A and Metop B). This gives NOAA and EUMETSAT the ability to share satellite instrument data and products.

NOAA Successfully Implements Grants-on-Line

NOAA implemented the Grants-on-Line program in 2005, enabling a 27% increase in workload from last year for a total of 1900 grants awarded. In addition, on the final day that grants could be entered into the system, only 41 grants remained, representing a 50 percent improvement over last year in the timeliness of grant processing. Close to 100 percent of grants are now applied for electronically using grants.gov.

Significant Progress in Modernizing NOAA's Fleet of Ships

NOAA's first new world class fisheries survey vessel, OSCAR DYSON, was delivered, commissioned and began operations collecting data to manage fishery stocks and protect marine mammals from its home port of Kodiak, Alaska. NOAA also began construction on the FSV 2 (BIGELOW). In addition a contract was awarded and conversion begun on former Navy T-AGOS vessel CAPABLE, which will be NOAA's first ship devoted to ocean exploration. Through a national ship-naming contest, CAPABLE will be commissioned OKEANOS EXPLORER.

NOAA Earns Unqualified Audit Opinion for 7th Straight Year

NOAA has been under the scrutiny of an external audit of our financial statements since 1994, and has received an "unqualified opinion" on its statements each year since 1998. An unqualified opinion is an independent auditor's opinion of our financial statements, given without any reservations. This opinion states that the auditor believes NOAA followed all accounting rules appropriately and that the financial reports are an accurate representation of the agency's financial management.